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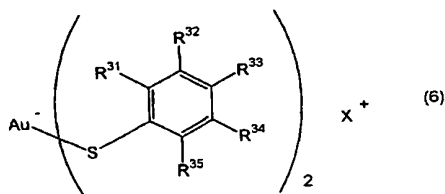
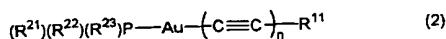
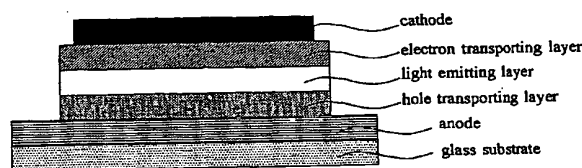
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[Continued on next page]

(54) Title: ORGANIC LIGHT EMITTING DEVICE MATERIAL AND ORGANIC LIGHT EMITTING DEVICE



(57) Abstract: The present invention provides phosphorescent materials and polymer phosphorescent materials that generate lights of various colors including blue, green, yellow, orange and red, which are useful for high performance multicolor organic light-emitting EL devices, and also provides an organic light emitting device material containing a gold complex represented by formulae such as (2) and (6) below (symbols in the formulae are as described in the specification) in which gold is bonded to at least one atom selected from carbon, oxygen and sulfur, and organic light-emitting EL device including the material in its light-emitting layer.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

National Application No

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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07F C09K H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	MA Y ET AL: "HIGH LUMINESCENCE GOLD(1) AND COPPER(1) COMPLEXES WITH A TRIPLET EXCITED STATE FOR USE IN LIGHT-EMITTING DIODES" ADVANCED MATERIALS, VCH VERLAGSGESELLSCHAFT, WEINHEIM, DE, vol. 11, no. 10, 9 July 1999 (1999-07-09), pages 852-857, XP000865127 ISSN: 0935-9648 figure 1	1-16
X	IRWIN M J; VITTAL J J; PUDDEPHATT R J: "Luminescent Gold(I) Acetylides: From Model Compounds to Polymers" ORGANOMETALLICS, vol. 16, 1997, pages 3541-3547, XP002272312	17
Y	the whole document	1-12, 16

-/-

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/JP -03/14514

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>LU W; XIANG H-F; ZHU N; CHE C-M: "The 3(, *) Emission of Cy3PAu(CC)nAuPCy3 (n=3, 4). Effect of Chain Length upon Acetylenic 3(, *) Emission" ORGANOMETALLICS, vol. 21, 5 March 2002 (2002-03-05), pages 2343-2346, XP002272313 chart 1</p>	17
A	<p>MA Y; ZHOU X; SHEN J; CHAO H-Y; CHE C-M: "Triplet luminescent dinuclear-gold(I) complex-based light-emitting diodes with low turn-on voltage" APPLIED PHYSICS LETTERS, vol. 74, no. 10, 8 March 1999 (1999-03-08), pages 1361-1363, XP002272314 the whole document</p>	1-12, 16, 17
A	<p>YAM V W-W; CHAN C-L; CHOI S W-K; WONG K M-C; CHENG E C-C; YU S-C; NG P-K; CHAN W-K; CHEUNG K-K: "Synthesis, photoluminescent and electroluminescent behaviour of four-coordinate tetrahedral gold(I) complexes. X-Ray crystal structure of 'Au(dppn)2Cl'" CHEMICAL COMMUNICATIONS, 2000, pages 53-54, XP002272315 the whole document</p>	1-12, 16, 17
X	<p>MÜLLER T E; CHOI S W-K; MINGOS D M P; MURPHY D; WILLIAMS D J; YAM V W-W: "Synthesis, structural characterization and photophysical properties of ethyne-gold(I) complexes" JOURNAL OF ORGANOMETALLIC CHEMISTRY, vol. 484, 1994, pages 209-224, XP002272316 figure 4</p>	17
X	<p>BRUCE M I; GUNDY K R; LIDDELL M J; SNOW M R; TIEKINK E R T: "Inclusion and aggregation properties of organogold complexes: crystal structures of C2{Au[P(C6H4R-3)3]}2.nC6H6 (R=H, n=2; R=Me, n=0 and 1)" JOURNAL OF ORGANOMETALLIC CHEMISTRY, vol. 344, 1988, pages c49-c52, XP002272317 figure 1</p> <p style="text-align: center;">-/--</p>	17

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/JP 03/14514

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MILLS A ET AL: "USE OF LUMINESCENT GOLD COMPOUNDS IN THE DESIGN OF THIN-FILM OXYGENSENSORS" ANALYTICAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY, COLUMBUS, US, vol. 69, no. 14, 15 July 1997 (1997-07-15), pages 2842-2847, XP000696577 ISSN: 0003-2700 the whole document	1-12,17
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Y	NARAYANASWAMY R; Y M A; PARKHURST E; OUELLETTE M; KERR M E; HO D M; ELDER R C; BRUCE A E; BRUCE M R M: "Synthesis, Structure, and Electronic Spectroscopy of Neutral, Dinuclear Gold(I) Complexes. Gold(I)-Gold(I) Interactions in Solution and in the Solid State" INORGANIC CHEMISTRY, vol. 32, 1993, pages 2506-2517, XP002280188 cited in the application the whole document	1,13,15, 16
X	DATABASE WPI Section Ch, Week 200103 Derwent Publications Ltd., London, GB; Class J04, AN 2001-022297 XP002280190 & RU 2 150 689 C1 (UNIV KRASY) 10 June 2000 (2000-06-10) abstract	1,13,16
A	FORWARD J M; BOHMANN D; FACKLER J P, JR.; STAPLES R J: INORGANIC CHEMISTRY, vol. 34, 1995, pages 6330-6336, XP002280189 the whole document	1,13-16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 03/14514

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM. PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1 (part), 2 (part), 3-12, 16 (part), 17

A material for an organic light emitting device comprising a gold complex in which gold is bonded to at least one carbon atom as defined in claim 1; organic light emitting device comprising this compound.

2. claims: 1 (part), 16 (part)

A material for an organic light emitting device comprising a gold complex in which gold is bonded to at least one oxygen atom as defined in claim 1; organic light emitting device comprising this compound.

3. claims: 1 (part), 2 (part), 13-15, 16 (part)

A material for an organic light emitting device comprising a gold complex in which gold is bonded to at least one sulfur atom as defined in claim 1; organic light emitting device comprising this compound.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 03/14514

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
RU 2150689	C1	10-06-2000	NONE